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Scheurlen as defective. From the reports of this meeting it would appear that but few of the leading men of Germany are yet ready to accept Scheurlen's claims as established.

BOOK-REVIEWS.

Lectures on Bacteria. By A. DE BARY. 2d ed. Tr. by Henry E. F. Garnsey and Isaac Bayley Balfour. Oxford, Clarendon Pr. 8°. \$5.50.

THIS is an excellent translation of De Bary's 'Vorlesungen ueber Bacterien,' with a considerable number of notes in an appendix. For one who wishes a good readable account of the nature and action of bacteria, not too long or too full of technical details, this moderate-sized and well-arranged volume answers the purpose admirably.

The Children: How to Study Them. By FRANCIS WARNER, M.D. London, Francis Hodgson. 12°.

THIS little volume contains half a dozen lectures, delivered by request of the Froebel Society of London, by Dr. Warner, whose works on the anatomy of movement and on physical expression are widely known. The object of the lectures is to impress upon teachers and parents the necessity and importance of the scientific observation of children. The plea is admirably and emphatically urged. On the practical side there is an attempt to give a number of indications by which the physiological health and growth of children can be observed. Though these are doubtlessly useful, and when made by a skilled observer valuable, yet they are too vaguely stated to be generally applicable. A table of printed questions, with directions as to their use, would be a much safer and more useful compend to put into the hand of the ordinary teacher. Dr. Warner sketches the anatomy of the parts of the body concerned in motion, shows how they are all related to the activity of the brain, and thus become an index of mental strength or weakness, and then describes a series of postures of various parts of the body, and especially of the hand, indicative of various temperaments. He lays stress upon the indications of the nervous type of child with the practical object of teaching such children separately, as we do with the deaf, the blind, and the weak-minded. "Why, then, are the children of slight brain-defect not specially cared for, children tending to become passionate picking up bad habits and practising them, tending to criminality, or, if too feeble for that, to pauperism? . . . Now, my argument is, that we can discover such children and pick them out in a school by definite physical signs; we can point out the children not up to the average, and tending to failure from want of brain-power." This series of lectures adds to the number of indications of the time when we shall have definite knowledge of the physical and mental traits of children by which their healthy education may be guided, and their evil tendencies avoided.

Annual Report of the Geological Survey of Pennsylvania for 1886. Parts I. and II. Harrisburg, Geol. Surv. 8°.

ALTHOUGH Professor Lesley's staff is now quite small, this report adds four volumes to the imposing series already published by the Second Geological Survey of Pennsylvania. Many of these numerous volumes, although possessing a local interest and value as aids in economic developments, are, from the scientific point of view, simply masses of facts awaiting generalization; and it is to be hoped that the long-promised final report which is to co-ordinate these multitudinous data will soon begin to appear.

Only the first two volumes of the report for 1886 have been received. These are crowded with details of the development and production of coal, oil, and gas, but are rather deficient in features of more than local interest not previously published; and, since the data are largely of a statistical nature, even their local value must be diminished by tardy publication.

The first volume contains the report, by Mr. E. V. d'Inwilliers, on the re-survey of the Pittsburg coal-region. It is largely a summary, in one volume, of the surveys made a decade since by Professor Stevenson, Mr. White, and others. It is accompanied, however, by a new geological map of south-western Pennsylvania. Special attention is given to the principal commercial coal of the region, — the great Pittsburg bed. Its outcrop is determined horizontally

and vertically more accurately than ever before; and the historical and statistical facts bearing upon its development, the structural lines affecting its position for mining; the stratigraphical features of the coal-measure systems above and below it; and the methods most in use for mining and transporting its product to market, — are exhibited in all desirable fulness and detail. It is easy to see that this report must prove of great practical utility to the coal-operators of the region; and the elevations above tide of the outcrop of the Pittsburg coal-bed will be useful to oil and gas prospectors in giving them a basis from which to estimate the depth to be drilled in order to reach the geological horizons of the different oil and gas sands.

This report is supplemented by two important contributions on Pennsylvania bituminous coal mining by Mr. A. N. Humphreys and Mr. Selwyn Taylor, and is also accompanied by a memoir by the eminent and venerable paleo-botanist, Leo Lesquereux, on the character and distribution of paleozoic plants.

The second volume consists chiefly of Mr. Carll's report on the oil and gas regions. The history of development is the most complete yet published, and gives the reader a good general idea of the successive steps by which the petroleum industry has advanced from the primitive skimming of an oil-spring with a piece of bark and the restricted use of the material to medicinal purposes, to the drilling of wells three thousand feet deep, the pumping of oil over mountain and valley to the seaboard, and the flooding of the world with an inexpensive illuminant. The ancient pits or shallow wells which are found all over the oil-region, and which were undoubtedly dug to obtain oil, are discussed at some length; and the conclusion is reached that these early oil operations are due, not to the Indians, or French, or early white settlers, but to some primitive dwellers on the soil, who have long since passed away.

Short chapters on the geographic and topographic distribution of oil and gas, on the structure and stratigraphy of the productive horizons, and on the developments during 1886, are followed by a long and monotonous series of well-records, which constitute the principal part of the report. The volume concludes with a memoir on the chemical composition of natural gas by Professor Phillips, and the extended bibliography of petroleum.

Unfinished Worlds: a Study in Astronomy. By S. H. PARKES. New York, Pott. 12°. \$1.50.

THIS book is intended for general readers, especially those in early life, whose ideas of the province and achievements of science are generally in excess of the sober teachings of actual experience. In this we quote from the author, and, while we are ready to agree with him to a large extent, yet we feel that just as the knowledge of Columbus seemed wonderful and awe-inspiring to his crews when he predicted the coming of an eclipse, so to us appear startling the little scraps of information our new instruments are giving us of the constitution of the celestial bodies. The old astronomy busied itself with the movements, the new astronomy with the physical constitution, of the sun, the stars, the planets, and comets. While it is true that for many of us the interest in the old astronomy began to wane, the results already achieved in this new field are so novel that we may be pardoned if we are apt to exaggerate their magnitude. Mr. Parkes's book has for its main purpose the bringing-out clearly of the changing nature of the bodies filling space, and sketches the information we have of nebulae, stars, the sun, the earth, the planets, and comets. All this is well done. The book closes with a *résumé* of the different cosmic theories.

NOTES AND NEWS.

THE January number of the *Revue Philosophique*, edited by Felix Alcan, contains articles by A. Espinas on the mental evolution of animals, by F. Paulhan on associationalism and psychical synthesis, and by Adam on Pascal and Descartes. Besides this, reviews and *résumés* of new publications are given.

— Prof. J. J. Egli of Zurich, Switzerland, who writes the biennial reports of new researches on geographical names for Wagner's annual report on the progress of geography, publishes a circular letter in which he requests authors and publishers to send him copies, or, when such is not possible, titles, of publications and of notes or papers in journals or books referring to the subject of geo-